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ABSTRACT

Type A behavior involves struggle for achievement, chronic time-urgency, and hostile aggression as opposed to Type B behavior, which is the absence of these behaviors. Type A behavior has been associated with the prevalence, recurrence, and future incidence of coronary heart disease. The attributions and achievement-relevant cognitions of 50 Type A and Type B male undergraduates, in response to success and failure, were assessed using a method for studying Articulated Thoughts in Simulated Situations. Subjects listened to two tapes and then verbalized their thoughts. One tape dealt with the subject imagining himself in an academic failure situation, the other in an academic success situation. The Jenkins Activity Survey was used to classify subjects as Type A or Type B. While expected A-B differences in self talk were not revealed, a pattern of relationships emerged for Type A's between causal attributions for success and failure and positive success expectancies. Significant positive correlations wre observed, for Type A's, between the frequencies of effort attribution for failure and positive success expectancies. Attributions to task difficulty and chance factors were negatively correlated with frequency of emission of positive success expectancies in response to failure. With regard to the success situation, frequencies of ability attributions and positive success expectancies were highly correlated. Analyses of the self talk of Type B's showed no relationships between these cognitions, suggesting that the mediating role of causal attribution may be of greater significance for Type A's than for Type B's. (Author/ABL)

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The Type A Coronary Prone Behavior Pattern: Articulated Thoughts and Attributions in Achievement Situations

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Running Head: Attributions and Type A Behavior

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ABSTRACT

The attributions and achievement-relevant cognitions of Type A and Type B undergraduates, in response to success and failure, were assessed using a method for studying Articulated Thoughts in Simulated Situations. While expected A-B differences in self talk were not revealed, a pattern of relationships emerged, for Type A's between causal attributions for success and failure and positive success expectancies. Significant positive correlations were observed, for Type A's, between the frequencies of effort attributions for failure and positive success expectancies. Attributions to task difficulty and chance factors were negatively correlated with frequency of emission of positive success expectancies in response to failure. With regard to the success situation, frequencies of ability attributions and positive success expectancies were highly correlated. Analyses of the self talk of Type B's showed no relationships between these cognitions, suggesting that the mediating role of causal attributions may be of greater significance for Type A's than for Type B's.

The Type A personality has been characterized as a particular style of response to situations perceived as challenging or threatening to one's sense of control (Glass, 1977). The core elements of this behavior pattern are struggle for achievement, chronic time-urgency, and hostile aggression (Rosenman & Chesney, 1980). The Type B pattern, on the other hand, is defined as the relative absence of such characteristics (Friedman & Rosenman, 1974). Substantial evidence implicates Type A behavior in the prevalence, recurrance, and future incidence of coronary heart disease (Caffrey 1969; Rosenman, Brand, Jenkins, Friedman, Straus, & Wurm, 1975).

A recent trend in Type A research has been to focus on the underlying psychological foundations of this behavior pattern (Matthews, 1982). Of particular interest, is the cognition of Type A persons in response to failure and threats to control (Glass, 1977; Brunson & Matthews, 1981). Ample evidence suggests that the maladaptive "coping attempts" of Type A persons reflect a belief that they are responsible or "causal" for life circumstances (Rhodewalt & Davison, 1983). Research by Brunson and Matthews (1981) supports this assertion. In their study, Type A's and Type B's were asked to "think aloud" while performing unsoluable discrimination problems. Content analyses of verbalizations revealed that Type A's tended to attribute their poor performance to a lack of ability, verbalized more negative affective statements, and used less effective problem solving strategies. Type B's commented instead on task difficulty and bad luck. This "attributional style" in Type B's did not affect their problem solving performance.

In the present study, a recently developed experimental paradigm for studying cognition, Articulated Thoughts in Simulated Situations (ATSS) (Davison, Robins, & Johnson, 1983), was used to explore the attributions and achievement-relevant cognitions of Type A and Type B undergraduates. Subjects listened to audiotaped recordings of simulated academic success and failure situations and were asked to pretend that the persons on the tape (professor and teaching assistant) were talking about them. Segments of audiorecordings were followed by a thirty-second silence during which subjects verbalized their thoughts. Research by Davison, Feldman, & Osborne

(1984) indicates that ATSS is successful in eliciting reports from persons regarding their thoughts in reaction to various complex simulated events. Further, this approach permits open-ended responding without interference from competing tasks.

Categories for content analyses of verbalized cognition were adapted from the studies of Diener & Dweck (1978) and Brunson & Matthews (1981), since their categorization scheme provided a reliable and meaningful analysis of attributions and other cognitive events. Categories used in the present study include causal attributions (to ability, effort, task difficulty, and/or chance factors), statements of affect (positive and/or negative), and positive success expectancies. It was expected that, relative to Type B's, Type A's would focus more on the causal role of ability and effort in success and failure, thereby increasing their perceived control over future performance.

This study sought also to determine the associations between attributions and achievement expectancies of Type A's and Type B's. It seemed reasonable to expect, in general, that subjects who focussed on insufficient effort as responsible for failure would be more hopeful about future performance (i.e. report more positive success expectancies) than subjects who did not consider the causal influence of this factor. In contrast, subjects whose thoughts centered on the causal role of ability deficits in failure were expected to be less optimistic and verbalize fewer positive success expectancies. Similarly, it was predicted that internal attributions for success would be positively associated with future success expectancies. Evidence that attributions influence task performance in Type A's but not Type B's (Brunson & Matthews, 1981), led us to expect that the relationships between attributions and achievement expectancies might be significantly more pronounced for Type A's than for Type B's.

METHOD

Subjects

The subjects were 50 male undergraduates enrolled in an introductory psychology course at the University of Southern California. They received extra credit for their participation in this study.

Materials

Two audiotapes were constructed, each consisting of 7 segments

of fifteen to twenty seconds duration. Each segment of audiorecording was followed by a thirty - second pause during which subjects verbalized their thoughts.

Academic Failure Tape: Subjects were asked to imagine that they had made an appointment with their teaching assistant to discuss their class performance, and that while waiting in the outside office, they were overhearing their teaching assistant and their professor talking about them. The segments of this tape involved critical evaluations of the subject's academic performance such as "I took another look at his paper...He dealt with most of the issues in a pretty slipshod way" and "I'm really disappointed with his performance... I had hoped that he would be doing better in this class".

Academic Success Tape: The introductory audiotaped context to this tape is identical to that of the failure tape described above. The segments of this tape consisted of very positive evaluations of the subject's performance such as "Have you taken a look at his latest assignment? His paper is really well written" and "It's a real pleasure as an instructor to have students like him in class".

Jenkins Activity Survey: The student version of the Jenkins Activity Survey (JAS) (Glass, 1977) was used to classify subjects as Type A or Type B. Group membership was determined by a median-split computation; subjects receiving a score of 9 or below were classified as Type B and subjects with a score of 10 or above were classified as Type A. Analyses were also performed using only those subjects who scored in the top third and bottom third of the distribution of JAS scores. Median-split and top-bottom classifications yielded identical results. Results reported below were obtained using Glass's (1977) median-split classification method.

Procedure

Undergraduates were recruited for an experiment on "Things People Think." They were told that the investigator was interested in the kinds of thoughts and feelings that people have in certain situations. A male experimenter escorted each subject individually into the experimental room and asked him to sit down. About five feet from the subject's chair were two large stereo speakers. Two microphones were placed directly in front of the subject.

Subjects were asked to listen to an audiotaped simulated situation, and to imagine that the persons on the tape were talking about them.

They were instructed to attend to the thoughts that they have as the situations unfold and to say these thoughts aloud at the end of each segment. (There was a short tone at the beginning and the end of each segment). Subjects were informed that the experimenter was in the control room (out of sight of the subject), and that they could stop to ask questions whenever necessary.

All subjects heard both the academic failure and academic success tapes. The order of presentation was varied randomly. Following the tapes, all subjects completed the student version of the JAS.

Results

Scoring

The dependent variable of interest was the content of subjects' articulated thoughts. These verbalizations were coded by two independent raters, on a segment by segment basis, for the presence or absence of thoughts in each of the following categories of articulated thoughts.

Ability Attributions: Statements indicating a causal attribution to one's ability.

Effort Attributions: Statements indicating an attribution of outcome to the degree of effort expended.

Task-related Attributions: Statements indicating an attribution to external aspects of the task situation such as the coursework, the instructor, or the testing situation.

Chance Attribution: Statements attributing the outcome to luck or chance factors.

Statements of Positive Affect: Statements indicating that the situation is enjoyable or that the subject is feeling pleased or happy.

Statements of Negative Affect: Statements indicating that the subject is unhappy, uncomfortable or anxious in the situation.

Positive Success Expectancies: Statements indicating that the subject expects positive performance outcomes in the future.

Raters and Reliability of Content Analysis

All segments were independently coded by the investigator and an undergraduate research assistant who was unaware of the nature of the study. Raters were trained in the use of the categories using pilot subjects' tapes and were blind to subjects' scores on the JAS. Each rater coded the tapes on a segment basis; each of the seven categories received a dichotomous rating of 0 (statement absent) or 1 (statement present) for each 30-second segment of subjects' verbalizations.

For each subject, a sum score was computed for each of the categories of articulated thoughts for each stimulus tape, by adding together the ratings for each of the seven segments. It should be noted that these categories are not mutually exclusive; any given 30 seconds of verbalizations could receive a rating in any or all of these categories. Inter-rater reliabilities were computed separately for each category using the Pearson Product-Moment correlation coefficient. The mean reliability coefficient for all categories is r = .89, with a range of r = .82 to r = .95. Scores for each of the categories were summed across raters and divided by two to yield a mean score for each subject on each stimulus tape. These averaged scores constitute the data used in the final analysis.

Analysis of Articulated Thoughts

Order of Presentation: Recall that the order of presentation of the stimulus tapes (success versus failure) was randomly varied to control for order of presentation effects. As a check of this manipulation, seven 2 x 2 analyses of variance were performed--one for each of the seven categories of articulated thoughts. Results indicated a lack of significant effect for order of presentation of stimulus tapes. Subjects who heard the success tape before the failure tape did not differ in their articulated thoughts from subjects who heard the failure tape first. Thus, for the following analyses, subjects' scores were combined across this counterbalancing dimension.

Total Number of Attributions: It is possible that any differences observed between Type A's and Type B's in attributions as reflected in articulated thoughts could be due to a between-group difference in the overall number of attributions articulated. Therefore a 2 x 2 analysis of variance with a within-subjects factor of tape condition and a between-group factor of Type (A versus B) was conducted. Type A's and B's did not differ significantly in the total number of attributions given in response to the success or failure tapes. Mean frequencies of attributions for the success and failure tapes are shown in Table 1.

Attributions, Affect and Positive Success Expectancies: The number of verbalizations coded into each category of articulated thoughts were analyzed by a series of 2 X 2 (Group Membership x Tape Condition) repeated measures analyses of variance. The results revealed no significant effects for the group membership variable for any of the seven categories of articulated thoughts. Type A and Type B subjects verbalized an equal number of attributions to

ability, effort, task, and chance factors, as well as positive and negative affective statements and positive success expectancies, in response to the success tape and to the failure tape. Additionally, no significant interactions between Group Membership and Tape Condition were observed. There were, however, significant effects for the Tape Condition variable, regardless of group. These results are shown in Table 1.

As expected, the types of attributions reported by subjects differed according to the valience of the overheard academic feedback. Subjects, whether classified as Type A or Type B, reported a significantly greater number of attributions to ability in response to the success tape ($F(1,48) = 10.31$, $p < .003$). The academic failure tape, on the other hand, elicited a significantly greater number of attributions to chance factors ($F(1,48) = 14.7$, $p < .001$) and to situational factors such as course difficulty ($F(1,48) = 25.3$, p .001). Attributions to the degree of effort expended, however, occurred with equal frequency in response to the two tape conditions.

Subjects' self-reported affective statements and positive success expectancies differed also in response to the success versus the failure tape. Not surprisingly, subjects articulated a significantly greater number of statements of positive affect to the success tape than to the failure tape ($F(1,48) = 173.2$, $p < .001$). The converse was also true; the academic failure tape elicited more self-statements of negative affect from subjects than the academic success tape ($F(1,48) = 28.9$, $p < .001$). Furthermore, academic failure, relative to success, led to a significantly greater number of positive success expectancies, indicating that subjects were more likely to think about succeeding in the future, following failure than after a successful performance ($F(1,48) = 17.3$, $p < .001$). These results are presented in Table 1.

As described above, the total number of attributions reported by subjects in response to the tape conditions was also determined. Results of this analysis indicated that subjects, whether classified as Type A or Type B, reported a significantly greater number of attributions in response to the failure tape than to the success tape ($F(1,48) = 10.1$, $p < .003$). This finding is consistent with past research indicating that subjects spend more time thinking about the causes of their failure than about the reasons for their successes (Weiner, 1974).

To assess the possibility that observed differences in the frequency of attributions to ability, task difficulty, and chance factors were due to differences in the total number of attributions given to each situation, the data were reanalyzed using percentages of attributions coded into each of the four attributional categories. A series of t-tests on dependent paired observations (i.e., success and failure) revealed results that were consistent with results from the analyses described above. Specifically, (a) the percent of attributions to ability reported by subjects was significantly greater in response to academic success than to failure ($t = 7.11$, $p < .001$), (b) the percent of attributions made to effort did not differ according to the tape situations, (c) subjects gave a significantly larger percentage of attributions to task difficulty in response to failure ($t = 4.5$, $p < .001$), and (d) the percent of chance attributions reported was greater for the failure tape than for the success tape ($t = 1.7$, $p < .05$). These results are presented in Table 2.

Relationships Between Attributions and Positive Success Expectancies

Correlations were computed, for the success tape and failure tape, between the total number of attributions coded into each of the four attribution categories and the total number of positive success expectancies. These results are shown in Table 3.

Failure situation: Analyses of self talk showed, for Type A's, a significant positive correlation between the frequencies of effort attributions and positive success expectancies ($r = .37$, $p < .03$). Task attributions were negatively correlated with positive success expectancies ($r = .32$, $p < .05$), as were chance attributions ($r = .27$, $p < .09$). The self talk of Type B's showed no significant correlations between the frequencies of thoughts coded into these categories.

Success situation: Analyses of self talk showed a significant positive correlation between ability attributions for success and the positive success expectancies of Type A's ($r = .55$, p .002). Analyses showed no significant correlations for Type B's.

DISCUSSION

The results of this study are consistent with Brunson and Matthews (1981), suggesting that the mediating effect of causal attributions on expectancies and performance may be of greater significance for Type A's than for Type B's. While the self talk of Type B's revealed no associations between attributions and achievement expectancies, verbalizations

of Type A's showed a pattern of relationships that is consistent with Weiner's (1974) model of achievement motivation. Significant positive correlations were observed, for Type A's, between effort attributions and positive success expectancies. Although the direction of causalty cannot be determined from this analysis, one might expect that attributing failure to a lack of effort (an internal unstable factor) may lead to enhanced achievement expectancies in Type A's, and consequently to sustained striving in the face of failure. Attributions to task difficulty or chance (uncontrollable factors), on the other hand, may be associated with diminished success expectancies in Type A's and "giving up" when confronted with failure. With regard to success situations, focusing on the causal role of natural talents (i.e. ability), rather than hard work, may make a Type A person feel less deserving of the attainment. Consequently, he continues to think alot about future achievement (i.e. have positive success expectancies) and may continue striving to prove his self-worth.

Consistent with previous investigations utilizing the ATSS paradigm (Davison, Robins & Johnson, 1983; Davison, Feldman, & Osborne, 1984), the self-reported cognition of subjects differed according to the situations that were presented. Subjects reported a much greater number of attributions to ability and positive affective statements in response to success than in response to academic failure. The failure situation, elicited relatively more attributions to task-related factors and to chance. Additionally, subjects verbalized more negative affective statements and positive success expectancies in response to this failure, indicating that they were uncomfortable or anxious in this situation and that they were thinking about improving their performance in the future. Attributions to effort were emitted with an equal frequency across situations.

The results of this study provide evidence that people think more about the causes of bad events than they do about explanations for positive outcomes. Subjects, whether classified as Type A or Type B, articulated a greater number of attributions, overall, in response to the academic failure tape than to the academic success tape. Nonetheless, these findings indicate that questions regarding causality for success, as well as failure, are entertained by people and, furthermore, that these attributions will be reported spontaneously by subjects, even if not cued by experimenter-devised scales.

Analyses did not reveal differences in the articulated thoughts of Type A's and Type B's in response to academic success or to academic failure. Type A and Type B subjects reported an equal number of attributions to ability, effort, task-related, and chance factors. Likewise, no significant differences were found in the frequency of positive affective statements, negative affective statements, or positive success expectancies for either tape.

One interpretation of this lack of A-B differences concerns the salience or impact of the experimental situation. Recent research suggests that the greatest differences between Type A's and Type B's are observed when threats to control and failure are ambiguous or implicit. This view has received support in a study by Carver (1980), demonstrating that A-B differences in the perception of coercive intent in a persuasive communication were greatest in conditions of relatively low coercion; Type B's tended to "catch-up" to A's when the persuasive aspects of the communication were made more salient.

This line of thought suggests that an explicitly salient experimental situation may preclude the observation of subtle A-B differences in attribution and cognition. As the audio-tapes used in the present study involved explicit, unambiguous evaluations of academic performance, Type A's and Type B's may have been cued to interpret these situations in a similar manner (i.e., to rely less on their personal beliefs about causalty than on situational information). While Type A-B differences in self talk may indeed exist, a more implicit stimulus may be necessary for these effects to be revealed.

CONCLUSIONS

The articulated thoughts of Type A individuals showed an interesting pattern of relationships between attributions for success and failure and future achievement expectancies. While the expected differences between Type A's and Type B's in attributions and achievement related cognition were not revealed, the results of the present study do provide preliminary evidence for the role of attributions in mediating the effect of environmental events on Type A cognition and behavior. More conclusive support for this view may be provided by extending this line of research to include measures of overt behavior and task performance. Furthermore, questions regarding the cause-effect relationship between these variables may be addressed by experimental manipulations of attributions and various features of the experimental situation.

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Finally, it will be important in the future to explore these psychological mechanisms using a high risk clinical population, rather than analogue subjects, with the ultimate goal of developing more comprehensive assessments and treatment interventions sensitive to intra- and inter-individual variation on these important psychological dimensions.

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TABLE 1

MEAN NUMBER OF THOUGHTS IN EACH VERBALIZATION CATEGORY

	TYPE A CONDITION		TYPE B CONDITION			
Categories	Success	Failure	Success	Failure	Effect	F ratio
Ability Attribution	.68	.24	.80	.22	Condition	10.31*
Effort Attribution	1.20	1.30	.94	1.24		
Task Attribution	.41	1.46	.41	1.61	Condition	25.3**
Chance Attribution	.17	.43	.04	.44	Condition	14.7**
Total Number of Attributions	2.38	3.09	2.06	3.50	Condition	10.1*
Positive Success Expectancies	.69	1.32	.74	1.52	Condition	17.3**
Positive Affect	2.96	.46	2.38	.44	Condition	173.2**
Negative Affect	.56	1.54	.34	1.63	Condition	28.9**

*p < .003 **p < .001

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TABLE 2

MEAN PERCENT OF ATTRIBUTIONS FOR SUCCESS VS. FAILURE

Tape Condition	Factor			
	Ability**	Effort	Task**	Chance*
Success	.27	.40	.17	.07
Failure	.07	.35	.39	.14

*p < .05 **p < .001

TABLE 3

CORRELATION OF ATTRIBUTIONS WITH POSITIVE SUCCESS EXPECTANCIES

	POSITIVE SUCCESS EXPECTANCIES			
	Type A Condition		Type B Condition	
ATTRIBUTIONS	Success	Failure	Success	Failure
Ability	.548**	-.214	-.050	.040
Effort	.017	.366*	-.162	-.051
Task	.016	-.319*	.137	-.065
Chance	.010	-.265	-.111	.046

*p < .05 **p < .002